

1. Suppose the underlying process $Y(s)$, $s \in [-1, 1]$ has a known mean 0 and a spherical covariogram with range 0.8

$$C(h) = 1 - 1.5(h/0.8) + 0.5(h/0.8)^3.$$

We observe the process at 40 locations: $j/20$ for $j = \pm 1, \pm 2, \dots, \pm 20$ and predict $Y(0)$.

- (a) Calculate the 40 simple kriging coefficients. You may obtain the coefficients using matrix-vector operations or a R package such as `geoR` or `gstat`.
 - (b) Plot the coefficients against the sampling locations.
 - (c) You will find that the prediction is practically influenced by 8 locations: $\pm 1/20, \pm 17/20, \pm 16/20$ and $\pm 15/20$. Is this desirable?
2. Repeat Problem 1 for the squared spherical covariogram $C(h)^2$. Now, which locations are practically influential to the prediction of $Y(0)$? Which covariogram, the spherical or the squared spherical, would you prefer?